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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/678,183	10/02/2000	Daniel A. Schoch	M-193	4840

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EXAMINER	
WEST, JEFFREY R	

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2857	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/678,183	Applicant(s) SCHOCH ET AL.
	Examiner Jeffrey R. West	Art Unit 2857

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 August 2002* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☒ The proposed drawing correction filed on *29 August 2002* is: a)☐ approved b)☒ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

1. The examiner requests a copy of the relevant pages of the following reference, listed in the amendment filed August 29, 2002, as it is considered pertinent to the examination of the application:

R.L. Burden and J.D. Faires, Numerical Analysis, third edition (1985).

Drawings

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: "C" (Figure 4). A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

3. The abstract of the disclosure is objected to because it is less then the required length of 50 words. Correction is required. See MPEP § 608.01(b).

4. The disclosure is objected to because of the following informalities:

On page 19, lines 8-9, "U.S. Provisional Patent Application Serial No., 60/15*9,818" should be ---U.S. Provisional Patent Application Serial No., 60/159,818---.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> **The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.**

6. Claims 1-4, 6, 11, 20-24, and 26 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claims 1, 3, 6, 20, and 26 include the limitation of providing/storing an equation which can be used for generating a theoretical slide displacement curve based on the press speed and a plurality of variables corresponding to characteristics of the press. This equation, however, is never provided in the specification. Because the equation is not provided, the specification fails to describe to one having ordinary skill in the art the relationship between the variables and the slide displacement, or the nature in which variables can be represented by values in order to determine the slide displacement curve. Therefore, claims 1, 3, 6, 20, and 26 do not clearly describe the method of using the instant invention.

Claims 2, 4, and 21-24 are rejected under 35 U.S.C. 112, first paragraph, because they incorporate and fail to correct the lack of clarity present in parent claims 1, 3, and 20.

With respect to claims 2, 4, 22, and 26, the limitation of determining a variable corresponding to the press drive mechanism is unclear because there is no description of what type of variable, or corresponding unit, could be used in an equation to apply to the drive type of the press.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> **(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.**

8. Claims 1 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. Re. 34,559 to Mickowski in view of U.S. Patent No. 5,182,935 to Schockman.

Mickowski discloses a diagnostic method for analyzing and monitoring the process parameters in the operation of reciprocating equipment comprising a microprocessor in communication with a non-volatile memory, input device, display, and transducers (column 3, lines 61-68 and Figure 1) wherein the transducers sense and supply velocity data, that can be representative of time increments (column 6,

lines 30-31), to the microprocessor (column 4, lines 1-5) as a function of stroke position (i.e. ram/slide displacement above dead bottom center) during a production cycle (column 4, lines 23-33).

Mickowski also discloses inputting the velocity data to the microprocessor (column 7, lines 29-37 and 53-56), storing the data to determine the current displacement profile (column 2, lines 51-55) and plotting, on the display, the velocity as a function of displacement and a superimposed theoretical profile in order to compare the actual and theoretical curves at any individual point of displacement (column 4, lines 46-50 and 57-66). Mickowski also discloses obtaining, and plotting, the pressure/load data vs. displacement (column 5, lines 55-60) as well as the displacement vs. each increment of time (i.e. count quantity) in a stroke (column 6, lines 26-31 and column 7, lines 11-18).

Mickowski does not teach, however, providing an equation for calculating the slide displacement as a function of press speed and a plurality of variables at the computational device.

Schockman teaches a single reciprocating dynamic balancer for a double action stamping press comprising determining, and plotting, theoretical force (i.e. load) vs. crank angle and slide displacement vs. crank angle (i.e. count quantity) curves based on the speed of the press, the stroke length, connection rod length, and drive connection information (column 4, lines 5-20 and Figures 1, 2, and 6). Although Schockman doesn't specifically disclose providing these variables, with an equation, to a computational device to determine the curves, it is considered inherent that

some type of equation or formula must be used to translate the variable information into the load and displacement curves.

It would have been obvious to one having ordinary skill in the art to modify the invention of Mickowski to include providing an equation for calculating the slide displacement as a function of press speed and a plurality of variables to the computational device, as taught by Schockman, because Schockman suggests a method for determining slide displacement curves that takes into account the specifications of a double action press that effect its displacement (column 4, lines 5-8). Further, since Mickowski teaches plotting the load vs. displacement and teaches the relationship between displacement, velocity, and time measurements (column 6, lines 26-31) it would have been obvious to one having ordinary skill in the art to provide a more thorough diagnostic output by displaying a plot of load vs. time in addition to the aforementioned plots.

9. Claims 2 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mickowski in view of Schockman, and further in view of U.S. Patent No. 5,099,731 to Eigenmann.

As noted above, Mickowski and Schockman teach all the features of the claimed invention, except for determining an appropriate variable corresponding to the bearing size of the mechanical press.

Eigenmann teaches a multi-stroke punch press with a means for correcting the immersion depth and the length of feed comprising determining a theoretical design

characteristic curve of the depth of the immersion of the tool vs. the velocity of the strokes and comparing the theoretical curve against the actual curve (column 4, lines 24-40) wherein the no-load (column 3, lines 19-21) characteristic curve is determined using the heights of the bearings as well as a dynamic deflection value (column 3, lines 32-48).

It would have been obvious to one having ordinary skill in the art to modify the invention of Mickowski and Schockman to include determining an appropriate variable corresponding to the bearing size of the mechanical press, as taught by Eigenmann, because Eigenmann suggests that to obtain an accurate measure of tool displacement, all of the contributing factors, including bearing height and dynamic deflection, must be considered (column 3, lines 32-48).

10. Claims 5, 7-10, 20, 21, 23, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mickowski in view of Schockman, and further in view of U.S. Patent No. 5,113,756 to Fujii and U.S. Patent No. 5,555,757 to Smith et al.

As noted above, Mickowski and Schockman teach all the features of the claimed invention, except for determining the contact point on the actual slide displacement curve which corresponds to the slide contacting the stock material, establishing a start point on the slide downstroke between top dead center and the contact point, and establishing an end point on the slide upstroke between top dead center and the contact point.

Fujii teaches a method for determining and adjusting the die height of a press machine (column 5, lines 54-56) comprising a non-contact sensor that detects the position of a detection body attached to the slider (column 6, lines 9-18) and produces a signal indicating the contact between the slider and the bottom dead point position of the press (column 6, 18-21) as well as the contact between the slider and the top dead point position of the press (column 6, lines 27-31) in order to automatically adjust the die height during the operation of the machine (column 6, lines 32-47).

Smith teaches a flat die thread roller with a slide drive system that reciprocates in response to the cam rotation (column 5, lines 20-27) and a diagram illustrating the displacement curve of a slide in comparison with a reference displacement curve (column 4, lines 43-47, Figure 13, and column 10 line 66 to column 11, line 10) wherein the diagram labels a starting point on the downstroke of both displacement curves (column 11, lines 14-16), a point of full slide extension to the workpiece (column 11, lines 30-35), and an ending point on the upstroke of both displacement curves (column 11, lines 51-58). Although Smith doesn't specifically disclose labeling the starting point as a point between the top dead center and the contact point or the ending point as a point between the contact point and top dead center, since the applicant describes using the starting and ending points only as a comparison tool, the limitation that the starting point be at a position past the actual start of machining, is considered to be an engineering design choice.

It would have been obvious to one having ordinary skill in the art to modify the invention of Mickowski and Schockman to include determining the contact point on the actual slide displacement curve which corresponds to the slide contacting the stock material, establishing a start point on the slide downstroke between top dead center and the contact point, and establishing an end point on the slide upstroke between top dead center and the contact point, as taught by Fujii in combination with Smith, because, as suggested by Fujii, the combination would have continually adjusted the measurements of displacement taken during operation to account for thermal expansion (column 6, lines 38-50), and, further, the labeled diagram presented by Smith would have provided a clearer representation of the slide displacement for implementing the comparison described in the invention of Mickowski and Schockman.

11. Claims 6 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mickowski in view of Schockman, Fujii, and Smith, and further in view of U.S. Patent No. 5,099,731 to Eigenmann.

As noted above, Mickowski in combination with Schockman, Fujii, and Smith teach all the features of the claimed invention, except for determining an appropriate variable corresponding to the bearing size of the mechanical press.

Eigenmann teaches a multi-stroke punch press with a means for correcting the immersion depth and the length of feed comprising determining a theoretical design characteristic curve of the depth of the immersion of the tool vs. the velocity of the

strokes and comparing the theoretical curve against the actual curve (column 4, lines 24-40) wherein the no-load (column 3, lines 19-21) characteristic curve is determined using the heights of the bearings as well as a dynamic deflection value (column 3, lines 32-48).

It would have been obvious to one having ordinary skill in the art to modify the invention of Mickowski, Schockman, Fujii, and Smith to include determining an appropriate variable corresponding to the bearing size of the mechanical press, as taught by Eigenmann, because Eigenmann suggests that to obtain an accurate measure of tool displacement all of the contributing factors, including bearing height and dynamic deflection, must be taken into consideration (column 3, lines 32-48).

12. Claims 13 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mickowski in view of Schockman, Eigenmann, Fujii, and Smith, and further in view of U.S. Patent No. 5,870,254 to Baserman et al.

As noted above, Mickowski in combination with Schockman, Eigenmann, Fujii, and Smith teach all of the features of the claimed invention except for including a value of static stiffness with the other obtained press information for calculating the load on the press at any point of the slide stroke by multiplying the value of dynamic deflection for the relevant point of the slide stroke by the value of static stiffness.

Baserman teaches a transducer suspension system comprising a rotary actuator that moves an assembly to position the transducer elements on a plurality of sliders (column 3, lines 52-55) wherein the load on the slider is calculated by multiplying the

deflection of an imaginary axis passing through the center of the slider by its vertical stiffness (column 5, lines 26-31).

It would have been obvious to one having ordinary skill in the art to modify the invention of Mickowski, Schockman, Eigenmann, Fujii, and Smith to include a value of static stiffness with the other obtained press information for calculating the load on the press at any point of the slide stroke by multiplying the value of dynamic deflection for the relevant point of the slide stroke by the value of static stiffness, as taught by Baserman, because the combination would have provided a method for determining the necessary values for plotting the load vs. displacement, as taught by Mickowski, and the load vs. crank angle, as taught by Schockman, using a known characteristic-dependent load formula. Also, it would have been obvious to one having ordinary skill in the art to determine a plurality of dynamic deflection values along the slide stroke and use the same method for calculating the load at any desired point along the slider because it would have allowed the construction of a complete load plot over the entire operation of the machine.

13. Claims 14, 15, 17-19, 25, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mickowski in view of Schockman, Eigenmann, Fujii, Smith, and Baserman, and further in view of U.S. Patent No. 3,885,283 to Biondetti.

As noted above, Mickowski in combination with Schockman, Eigenmann, Fujii, Smith, and Baserman teach all of the features of the claimed invention, except for establishing the computed difference, along the ordinate, between the theoretical no

load value and the actual load value of slide displacement as the value of dynamic deflection.

Biondetti teaches a press roll comprising a beam that is straight under no load and bends slightly when loaded wherein the amount of bending is the dynamic deflection value (column 2, lines 44-48).

It would have been obvious to one having ordinary skill in the art to modify the invention of Mickowski, Schockman, Eigenmann, Fujii, Smith, and Baserman to include establishing the computed difference, along the ordinate, between the theoretical no load value and the actual load value of slide displacement as the value of dynamic deflection, as taught by Biondetti, because Biondetti suggests that the deflection of the press is caused by the application of a load. Therefore, in light of the teaching of Biondetti, it would have been obvious that the difference, along an imaginary parallel line, between a measurement of displacement under no-load and a measurement of displacement under load would have to be caused by the deflection of the press because the only difference between the measurements is the application of a load, and Biondetti teaches that the application of the load causes a deflection.

Response to Arguments

14. Applicant's arguments filed 29 August 2002 have been fully considered but they are not persuasive.

With respect to the objections to the specification, the applicant declares that the abstract and disclosure have been amended to include the requested changes; however, a copy of the new abstract and the corrected disclosure has not been received.

With respect to the rejection of claims 1-4, 6, 20-24, and 26 under 35 U.S.C. 112, first paragraph, Applicants' explanation that "curve-fitting equations are well known and are set forth in various text books" is not sufficient in overcoming the rejection. The Examiner agrees that curve-fitting equations are well known, however, this fact does not provide to one having skill in the art how to make and/or use the instant invention.

In response to the rejection of claims 1 and 3 under 35 U.S.C. 103(a) as being unpatentable over Mickowski in view of Schockman and claims 2 and 4 over Mickowski in view of Schockman and Eigenmann, Applicant argues that "there is no indication [in the invention of Schockman] of the use of an equation to calculate slide displacement based upon [various parameter] information" and "there is no indication that the displacement curves shown in Fig. 6 are indeed theoretically generated or display an actual force verses angle plotting." The Examiner maintains that in order for the invention of Schockman to combine a plurality of variables to arrive at a calculated value, some type of equation must be used. Further, the invention of Mickowski already teaches plotting, on the display, the velocity as a function of displacement and a superimposed theoretical profile in order to compare the actual and theoretical curves at any individual point of displacement, but does

not teach the equation to do so, for which the Schockman reference is included. Therefore the "theoretical" limitation is already disclosed by Mickowski. Further still, Schockman calculates a displacement curve using speed and equation values measured from the press during typical operation rather than values measured during actual machining operation.

In response to the rejection of claims 5, 7-10, 20, 21, 23, and 24 under 35 U.S.C. 103(a) as being unpatentable over Mickowski in view of Schockman, Fujii, and Smith et al. and claims 6 and 22 over Mickowski in view of Schockman, Fujii, Smith, and Eigenmann, Applicant argues that, in the Fujii reference, "there is no provision of a detector that is capable of determining the position of the slider at any points intermediate the bottom dead point and the top dead point" and that Smith does not teach "the establishment of a start point on the slide downstroke between top dead center and the contact point", "the establishment of an end point on the slide upstroke between the top dead center and the contact point", or "matching the actual slide displacement curve to the theoretical no slide displacement curve for the same mechanical press". The features of matching the curves and determining the position of the slider at intermediate points are taught by the invention of Mickowski and Schockman in order to plot, on the display, the velocity as a function of displacement and a superimposed theoretical profile in order to compare the actual and theoretical curves at any individual point of displacement. With respect to the establishment of the start and end points, the Examiner admits that this feature is

not specifically disclosed but maintains that since the applicant describes using the starting and ending points only as a comparison tool, the limitation that the starting point be at a position past the actual start of machining is considered to be an engineering design choice not critical to the implementation of the invention, and since the prior art teaches a functionally equivalent method for comparing the curves, the feature is not considered patentable over the prior art.

In response to the rejection of claims 13 and 16 under 35 U.S.C. 103(a) as being unpatentable over Mickowski in view of Schockman, Eigenmann, Fujii, Smith, and Baserman et al., Applicant argues that Baserman is non-analogous art because the forces being detected are on the order of a few grams instead of tons, and Baserman does not teach calculating "the load at any point on a slide stroke of a mechanical press". The Examiner recognizes that in order to be analogous art, the prior art must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, the Baserman reference and the instant invention are both concerned with performing accurate load calculations. Further, the invention of Mickowski discloses obtaining, and plotting, the pressure/load data vs. displacement (column 5, lines 55-60); the invention of Baserman is only included to teach using a value of static stiffness when calculating the load values in the Mickowski reference.

In response to the rejection of claims 14, 15, 17-19, 25, and 26 under 35 U.S.C. 103(a) as being unpatentable over Mickowski in view of Schockman, Eigenmann, Fujii, Smith, Baserman, and Biondetti, the applicant argues that Biondetti does not cure the deficiencies mentioned above. Each of the aforementioned deficiencies have been explained, except for specifying that the computational device is communicatively connected to the non-contact displacement sensor, and therefore the invention of Biondetti is still correctly used to teach establishing the computed difference, along the ordinate, between the theoretical no load value and the actual load value of slide displacement as the value of dynamic deflection. With respect to the communicative connection, the invention of Mickowski teaches connecting the press sensors to a microcomputer and the invention of Fujii teaches including a non-contact sensor that produces a signal to automatically adjust the die height during the operation of the machine, therefore it would have been obvious to one having ordinary skill in the art that in order to perform an operation based on measured value the non-contact displacement sensor must be in communication with a microcomputer.

Conclusion

15. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey R. West whose telephone number is (703)308-1309. The examiner can normally be reached on Monday through Friday, 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marc S. Hoff can be reached on (703)308-1677. The fax phone numbers for the organization where this application or proceeding is assigned are (703)308-7382 for regular communications and (703)308-7382 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

jrw
November 14, 2002

MARC S. HOFF
SUPERVISORY PATENT EXAMINER
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